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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/579,593	05/26/2000	Joseph J. Danko	81329A	8869

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EXAMINER
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STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/579,593

Applicant(s)

DANKO, JOSEPH J.

Examiner

Gordon J Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2003 and 11 August 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 is/are allowed.
- 6) ☒ Claim(s) 15-18 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. **Claim 19** is objected to for the following: the phrase, "time delayed integration model," should read --time delayed integration mode--. Correction is required.

### *Claim Rejections - 35 USC § 103*

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. **Claims 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakata et al. (5,046,847)** in view of **Bishop (6,091,488)**.

As for **claim 15**, Nakata in a method for detecting foreign matter discloses the following: intersecting a pair of intersecting stripe shaped regions on a wafer using first and second beams of light; said first beam of light striking at a first approach angle; second beam striking at a second approach angle; collecting at least some of the light scattered from the two regions illuminated but not specularly reflected as wafer is moving; forming an image of the area illuminated using a two dimensional solid state imaging element; masking off from the image formed the diffraction pattern produced by the lens from the background of the wafer (Fig. 1, col. 4, lines 13-37; col. 8, lines 20-67; col. 9, lines 1-20; Fig. 28a).

Nakata does not disclose utilizing a CCD camera in tdi mode. Bishop teaches a square array sensor TDI CCD camera in a system for inspecting semiconductor devices in order to have high scan speeds without blurring (col. 6, lines 1-8; col. 7, lines 1-10). It would be obvious to one skilled in the art at the time the invention was made to utilize a CCD camera square array sensor in TDI mode in order to obtain blur free rapid scanning.

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As for **claims 16 and 17**, Nakata in view of Bishop discloses everything as above (see **claim 15**). In addition, Nakata discloses the two stripe shaped regions intersect within the field of view of the system (col. 8, lines 20-67; Fig. 1). Nakata is silent concerning the regions intersecting in the center of the field of view, but there is scanning of the whole wafer (Fig. 28a). It would be obvious to one skilled in the art that the two intersecting striped regions will be within the center of the field of view of the system, for scanning the wafer will eventually have the intersecting striped regions appear in the center of the field of view.

4. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakata et al. (5,046,847)** in view of **Nishi (5,854,671)** and further in view of **Bishop (6,091,488)**.

As for **claim 18**, Nakata discloses the following in an apparatus for detecting foreign matter: a light source for illuminating a stripe shaped region; a two dimensional solid state imaging element; an imaging lens for imaging the area illuminated by the stripe shaped region on said imaging detector, said imaging lens having a Fourier plane, a filter disposed in the Fourier plane of said imaging lens for masking off the diffraction pattern produced by the background of the wafer from the beam of light (Fig. 1, col. 4, lines 13-37; col. 8, lines 20-67; col. 9, lines 1-20; Fig. 28a).

Nakata is silent concerning a holder. The Examiner takes Official Notice that a wafer holder is well known in the art. It would be obvious to one skilled in the art at the time the invention was made to have the apparatus comprise a holder in order to keep the wafer from sliding off the scanning stage.

Nakata discloses an x-y stage (col. 8, lines 22-24), but is silent concerning linear motors. Nishi in a scanning exposure apparatus for a wafer teaches using linear motors for moving the

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stage in an x and y direction (col. 18, lines 25-40). It would be obvious to one skilled in the art at the time the invention was made to have the x-y stage comprise a linear motor for the x-direction and a linear motor in the y-direction in order to have the x-y stage scan in two dimensions.

Nakata does not disclose a CCD camera in tdi mode. Bishop teaches a square array sensor TDI CCD camera in a system for inspecting semiconductor devices in order to have high scan speeds without blurring (col. 6, lines 1-8; col. 7, lines 1-10). It would be obvious to one skilled in the art at the time the invention was made to have the system comprise a CCD camera square array sensor in TDI mode in order to obtain blur free rapid scanning.

#### ***Response to Arguments***

5. Applicant's arguments, see remarks pages 10-12, filed June 5, 2003, with respect to claims 11-14, and 19 have been fully considered and are persuasive. The rejection under 35 U.S.C. 103(a) of claims 11-14 and 19 has been withdrawn.

6. Applicant's arguments filed June 5, 2003 with respect to claims 15-18 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., adjustable approach angles and approach angles that are angularly adjustable independent of each other) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

*Allowable Subject Matter*

7. **Claims 1-14** are allowed.

**Claim 19** would be allowable if rewritten to overcome the objection above.

As to **claim 1**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the first approach and incident angles being adjustable independent of second approach and incident angles limitation in an apparatus for detecting the presence of contaminant particles on a semiconductor wafer, in combination with the rest of the limitations of **claim 1**.

As to **claim 2**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the first approach and incident angles being adjustable independent of second approach and incident angles limitation and the angularly movable first and second tower limitations in an apparatus for detecting the presence of contaminant particles on a semiconductor wafer, in combination with the rest of the limitations of **claim 2**.

As to **claim 3**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the first approach and incident angles being adjustable independent of second approach and incident angles limitation in a method for detecting the presence of contaminant particles on a semiconductor wafer, in combination with the rest of the limitations of **claim 3**.

As to **claim 4**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the first approach and incident angles being adjustable independent of second approach and incident angles limitation in an apparatus for detecting the presence of contaminant particles on a semiconductor wafer, in combination with the rest of the limitations of **claim 4**.

As to **claim 5**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the first and second tower being angularly movable limitations in an apparatus for

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detecting the presence of contaminant particles on a semiconductor wafer, in combination with the rest of the limitations of **claims 5-10**.

As to **claim 11**, the prior art of record, taken alone or in combination, fails to disclose or render obvious a light source adapted to produce a first beam of light and a second beam of light; a first approach angle which is angularly adjustable; a second approach angle which is angularly adjustable; a CCD camera being operational in a time delayed integration mode in an apparatus for detecting the presence of contaminant particles on a surface of a semiconductor wafer having repetitive patterns, in combination with the rest of the limitations of **claims 11-14**.

As to **claim 19**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method for detecting the presence of contaminant particles on a semiconductor wafer having repetitive patterns each beam of light having an approach angle and an angle of incidence that is angularly adjustable independent of the approach angle and angle of incidence of the other beam of light, in combination with the rest of the limitations of **claims 19**.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 6,020,957 to Rosengaus et al.

U.S. Patent 6,078,386 to Tsai et al.

U.S. Patent 6,201,601 to Vaez-Iravani et al.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 308-7722*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



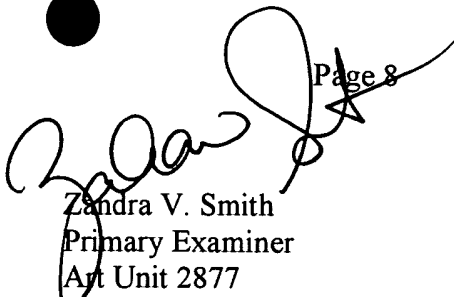
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August 14, 2003

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Zandra V. Smith  
Primary Examiner  
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